

**Response To: NMED questions and requests to EPA on the construction, operation and maintenance of the Gold King Mine Wastewater Treatment Facility (GKMWTF) at Gladstone, CO, following the site visit on March 7, 2016**

- 1. Please identify the design objectives of the GKMWTF, including the provisions and operating specification required of the contractor by EPA.**

Contract documents related to the Gold King Mine can be found on the EPA's Gold King Mine release website:

<https://www.epa.gov/goldkingmine/contract-documents-related-gold-king-and-red-and-bonita-mines>

<https://www.epa.gov/goldkingmine/epabor-superfund-program-work-authorization-form-waf-82015>

- 2. If as-built diagrams of the GKMWTF are available, please provide a copy.**

Please see attached plan view drawing for the system as depicted in the draft O&M manual. It is representative of the current system onsite.

- 3. What control of flow from GKM Adit #7 does EPA have and how is flow managed?**

In the current configuration, flow from the adit is gravity fed and flows from the adit to the interim water treatment plant at Gladstone via HDPE pipe from the collection sump at the portal. The capacity of that piping is approximately 1200 to 1400 gpm.

The clarifier system is rated to be able to effectively treat up to 1,000 gpm with a suspended solids/metals load of 500 mg/l. The clarifier may have the capacity to treat slightly higher flows with higher metals load for short periods.

The winter period flow from the mine has been approximately 480 gpm. The treatment system has effectively operated at flows as high as 1100 gpm during short periods (several hours) of testing to evaluate performance at higher flow rates with lower ranges of suspended solids/metals.

The remaining capacity above the current influent is being held in reserve for the expected increase spring flow. Due to the uncertainty about potential mine adit discharge flow increases associated with the snow melt, an additional 1000 gpm capacity Clarifier is being mobilized to the site in May.

In addition, retention ponds provide an additional contingency to temporarily treat a portion of

the mine water concurrently with the treatment plant flow.

- 4. What operating data have been collected since the start of operations of the GKMWTF (i.e., flow, pH, turbidity, etc.)? What data have EPA or the contractor decided to no longer collect, and why? Who collected the data and maintains the record of operations? How often does EPA staff inspect the data and discuss results with the contractor? Are records maintained of these discussions and of changes required by EPA based on these meetings or discussions?**

EPA has released sampling analysis data from operations of the Interim Water Treatment Plant (IWTP) at Gladstone which is treating mine water discharge from the Gold King Mine. EPA has implemented sampling and analysis of the untreated (influent) mine water and treated (effluent) water since the start-up of the IWTP. These have been performed independently of the contractor operating the system. Samples have been collected at least monthly and more frequently at times. Results have been used to evaluate performance and determine if system modifications were necessary. Modifications have been made during the course of commissioning the IWTP since October 2015. Data is located on the Gold King Mine website data page: <https://www.epa.gov/goldkingmine/INSERT-SPECIFIC-URL-HERE>

- 5. Based on discussions on March 7, there are 2 operators stationed at the GKMWTF. What hours are covered and how is the facility control when the operators are absent/off duty? Is certification or licensing required of these personnel to operate the facility, including those who may operate the site remotely? What authority requires the certification or licensing, and if certification or licensing is required, are the operators so certified or licensed?**

The contractor personnel involved in designing the system and responsible for construction oversight, monitoring and directing the operations are engineers who have industrial wastewater treatment certification in the State of Colorado. These individuals have the ability to adjust operating conditions remotely if necessary, and they have been at the plant throughout its construction and operation.

- 6. How are the lime and polymer feeds monitored and adjusted? How are stocks of these materials monitored and tracked?**

Hydrated lime slurry is added by a peristaltic pump just upstream of the reactor tank. The pump's rate is continuously monitored by the Process Logic Control (PLC), and the addition rate is adjusted per a set-point of the pH probe in the flocculent tank. Polymer is also added by a peristaltic pump at the flash tank. The pump's rate is continuously monitored by the PLC, and the addition rate is adjusted per a set-point of the NTUs at the turbidimeter (polymer addition is increased with more turbid water) or the incoming flow meter (polymer addition is proportional to the incoming flow rate). Reagent inventory is tracked at the end of each month with additional orders placed as needed.

- 7. An emergency generator is stationed at the site. How often is it exercised and are records**

**kept? What level of power to operate the GKMWTF can be maintained and for how long with current fuel stored at the site? Does this include supplying for power surges?**

Generator is exercised every Monday for 15 minutes as recommended by the rental company.

The stand-by generator is sized to power the entire treatment facility, including potential in-rush current for motor start-ups. The operating contractor maintains a minimum of 3 days of available fuel. This includes supplying for power surges.

- 8. Please describe the internal monitoring and control points for the GKMWTF. Please provide details of the operating levels for each point as specified by EPA. For example, where pH is monitored and controlled to treat metals concentrations, provide details on the mechanism for monitoring (i.e., frequency and type) and the level for which the GKMWTF operates at each location. Please also describe who is responsible for making decisions regarding treatment adjustments day-to-day.**

The pH is monitored at the flocculent tank. Turbidity is monitored at the discharge.

Control points are continuously monitored by the PLC and uploaded to an external website every 3 to 5 minutes, and are data logged every 30 minutes. There are two control points that affect plant operation: Set-point pH (typically between 8.75 to 9.25), and polymer set-point (maintain levels below 5 NTUs at discharge).

On-site operator can make adjustments to the IWTP PLC as needed. However, if the system triggers an alarm, modifications can be made to the PLC by the remote operators.

- 9. Other than the electronic monitoring for pH, turbidity and specific conductance, are other tests of water quality parameters conducted to manage or optimize operations? If so, what are the test parameters, who conducted or conducts the tests and what role does EPA play in reviewing the results?**

As noted above, EPA has posted sampling analysis data from operations of the Interim Water Treatment Plant (IWTP) at Gladstone on the Gold King Mine website data page:

<https://www.epa.gov/goldkingmine/INSERT-SPECIFIC-URL-HERE>

- 10. Please describe the SCADA system, what is monitored and how the call-out system is set up, and who is responsible for responding to SCADA alarms.**

SCADA system includes/monitors incoming flow meter (gpm), Clean Water Tank (gal), Polymer Tank (gal), Make-up Water Pressure (psi), Air Pressure (psi), Turbidity (NTU), Sludge flow rate (gpm), Polymer Pump Rate (%), Slurry Refill Rate (gpm), Slurry Tank (gal), Silo Level (ft), Upper

Pond Level (ft), Pumpback flow meter (gpm), Cell D Level (ft), Lime Pump Rate A (%), Lime Pump Rate B (%), Vibrascrew Feeder (%), Floc Tank pH (SU), and Clarifier pH (SU). The call-out system is set up to initiate e-mail alarms; with high, high-high, low, and low-low set-points established within the PLC, go to the four listed operators.

The on-site, local operator is the primary responder to SCADA alarms. If he is unavailable, remote operators can make adjustments to the IWTP's PLC. If needed, relationships with the local contractors have been established so they can also provide on-site responses if needed.

**11. Please list all permits issued to EPA or the contractor for the construction or operation of the GKMWTF. Please provide copies of the permits.**

Federal, State or Local Permits are not required under CERCLA Section 121(e)(1) for any removal or remedial action conducted onsite. However, EPA's contractor worked with the County to obtain a site (building) permit, and they obtained a "service" permit to extend electrical power to the facility. (Attached below)

**12. Please list all effluent limits imposed by the permits and the basis for how the effluent limits were calculated.**

There are not Permit Effluent Limits established for this treatment system. (See above CERCLA citation re Section 121(e)(1).

**13. Please describe the effluent monitoring conducted for flows from the GKMWTF to Cement Creek, including the frequency, type of analysis, laboratory conducting the analyses and turn-around time for results. Who reviews the effluent data and what decisions, if any, can and do they make on the basis of their analysis? Please provide the results of all effluent data.**

As noted above, EPA has posted sampling analysis data from operations of the Interim Water Treatment Plant (IWTP) at Gladstone on the Gold King Mine website data page:

<https://www.epa.gov/goldkingmine/INSERT-SPECIFIC-URL-HERE>

In addition to receiving sample analysis results from EPA, the operating contractor performs sample analysis as necessary to provide supplemental laboratory analytical data. They also review the effluent data, and decisions are made by the system operators and senior executives as appropriate to modify operating conditions at the IWTP.

**14. Based on an earlier inspection of the site in November 2015, we noted that woven wire fencing was partially installed around the perimeter of the sedimentation ponds upslope from the GKMWTF. Has this been completed and will similar measures be taken for the geobags at the GKMWTF?**

The chain-link fencing around the retention ponds was installed and completed to the required specifications to prevent people and animals from accidentally entering the pond system. The same risk does not exist with the dewatering pad, and it is necessary to have more complete access to the dewatering pad area to manage the filter bags.

**15. From what specific source are operations at the GKMWTF funded?**

The response action for the Gold King Mine Release Site is currently funded by the USEPA Removal program.

**16. We understand from our discussions on March 7, that operations of the GKMWTF will proceed as now configured into November 2016. What plans does EPA have to operate the GKMWTF beyond that? Are additional flows from other mines or the American Tunnel being considered for treatment at GKMWTF, and if so what modifications would be needed?**

The interim water treatment plant was constructed as part of the response action for the Gold King Mine release to provide treatment of the discharge from the mine until the next winter season, November 2016. EPA is evaluating the options for operation of the interim water treatment plant beyond November 2016.

**17. We discussed the final disposition of the collected solids in the geobags. EPA claimed the sediment in the bags can be disposed in a solid waste landfill. Please provide any TCLP and paint filter test results that support this conclusion or any other information that supports the disposal decision.**

**DAVID/KERRY/JOYEL: ARE PART OF THE DATA BEING POSTED ON THE GKM SITE?**

**18. We understand the GKMWTF is slated for closure in November of 2016? Why is the multi-million dollar facility deemed temporary in the face of continuing mine wastewater seepage?**

Please see response to #16.

**19. What is the contingency plan if storm events and/or spring runoff exceed the stated GKMWTF capacity of 900-1200 GPM?**

Due to the uncertainty about potential mine adit discharge flow increases associated with the snow melt, an additional 1000 gpm capacity Clarifier is being mobilized to the site in May. In addition, retention ponds provide an additional contingency to temporarily treat a portion of the mine water concurrently with the treatment plant flow.

BUILDING INSPECTION DEPARTMENT									
Town of Silverton & San Juan County, Colorado									
ADDRESS OF JOB 6736 Grand Rd. 110 - Silverton						GENERAL CONSTRUCTION PERMIT No 2326			
CLASS OF WORK: NEW <input checked="" type="checkbox"/> ADDITION <input type="checkbox"/> ALTERATION <input type="checkbox"/> REPAIR <input type="checkbox"/> MOVE <input type="checkbox"/> WRECK <input type="checkbox"/>									
PROPERTY OWNER [Signature]						PHONE [Blank]			
CONTRACTOR [Signature]						PHONE [Blank]			
LEGAL DESCRIPTION Lot # 6736-214-2011						ZONE (Use District)			
SURVEY BY [Blank]						A LIC PE NO [Blank]			
AREA S.F.		HEIGHT		TOTAL UNITS	TOTAL ROOMS	OFFICIAL USE ONLY			
MAX OCC. LOAD		HAZARD		FLOOR DRAINAGE <input type="checkbox"/> IS OFF <input type="checkbox"/>	PLOT PLAN <input type="checkbox"/>	PLAN CHECK FEE <input type="checkbox"/>		OCCUPANCY DASH	DIV
DESCRIBE WORK: New Metal Building									
BASEMENT:		GARAGE <input type="checkbox"/>		ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/>	SPACING	TYPE OF CONSTRUCTION			
FOUNDAION		ADJES		ROOF	AGENCY				
CEILING		FLOOR		CHIMNEY	AUTHORIZED BY				
WATER PROOFING		ROOF		DRIVING MATERIAL	DATE				
EXTERIOR FIN WALL THICKNESS		CAISSONS & OR BEAMS		ABOVE 1ST FLR.	ZONING				
EXTERIOR WALL		MASONRY THICKNESS		INSULATION	FOR				
STUD SIZE & SPACING		FIRE RATING			WATER SEWER				
REMARKS		Bill Mc Donnell			BUILDING REVIEW				
Visit Site Thursday		11-5-2015			PARKING				
NOTES TO APPLICANT:					PUBLIC HEALTH				
For inspections or information call 387-5522.					PLAN CHECK				
For all work done under this permit the permittee accepts full responsibility for compliance with the uniform building code, and the town zoning codes and all other town codes, whichever applies.					SCHOOL FEE				
Separate permits must be obtained for electrical and mechanical work, and signs.					VALUATION OF WORK				
Permit expires 180 days from date issued unless work is started.					BUDGETED COST \$59,620.00				
Required inspections shall be requested three working days in advance.					BUILDING PERMIT FEE \$866.75				
All final inspections shall be made on all items of work before occupancy is permitted.					PLAN REVIEW FEE				
This building shall not be occupied until a certificate of occupancy has been issued.					PLAN FILED TOTAL FEE \$866.75				
Permit subject to revocation or suspension for violation of any laws governing same.					DOUBLE FEE				
SIGNATURE OF APPLICANT					BUILDING DEPARTMENT				
APPROVED BY					DATE				
THIS FORM IS A PERMIT ONLY WHEN VALIDATED HERE					AMOUNT				
PARTS: Inspector's Copy, Bldg. Dept. File Copy, Assessor's Copy, Customer's Copy					RECEIPT NUMBER				
					RECEIVED BY				

TOWN OF SILVERTON  
SAN JUAN COUNTY

# BUILDING PERMIT

NO: 2326

Owner San Juan Coop.

Address 6736 South 74th

Date 10/22/15

Contractor SAB Construction/Alamo

Work new building

Expires 10/22/16